Executive Summary for the Washington Statewide Transportation Framework for GIS Project

Purpose
The Washington Statewide Transportation Framework Project (WA-Trans) was organized to create an electronic map of transportation data for use in Geographic Information Systems (GIS) applications across the state. This transportation data (called the transportation layer) will work with other statewide layers being developed or in existence including hydrography (water ways), cadastral (property boundaries), and orthophotography (aerial images rectified for elevation and other factors).

Background
Several cities, counties, transit systems, metropolitan planning organizations (MPO), state and federal agencies have transportation data for use in various GIS applications. Much of this data is collected and maintained individually at great cost, frequently in duplicative efforts, due to lack of communication and partnership. Many applications utilizing cross-jurisdictional data can't be developed or shared without a tremendous amount of rework to the data. Organizations who have application needs but no money to invest in their own GIS systems and their own data collection efforts are at a significant disadvantage and generally can't participate in data exchanges at all.

Objectives
1. Identify and recruit partners to develop, maintain and distribute the transportation framework and framework data that meets a set of business and analytical needs defined by the partners and users.
2. Develop a transportation framework data model and standards based on business and analytical needs for the data, technology available to implement the model, and the ability to provide and maintain the data over time.
3. Define and implement institutional arrangements to facilitate data collection and maintenance partnerships, and to make the data accessible at the least cost with the least restrictions on use.
4. Implement interactive platform independent software, database, and processes to support integration of data received from data providers, maintenance of data by data stewards, and data accessibility by partners and the general public.

Impacts
This project has the ability to assist meeting the business needs of a variety of organizations and business functions that do use, or could use, transportation data with geographic locations. These business functions and some uses can be summarized as follows:
1. Emergency Management
   i. E-911 needs maps to assist with dispatch of emergency vehicles and geographic locations when calls come in from cell-phones or vehicle location systems.
   ii. Emergency or disaster planning for evacuation routes and key transportation infrastructure and to develop models for decision support and analysis.
   iii. Homeland security could use transportation data for analyzing risks and contingency planning.

2. Infrastructure Management
   i. Planning for future transportation needs and uses can be done using models developed with statewide transportation data. Alternative analysis can be developed and visualization done with WA-Trans data and related applications. Data about crashes across jurisdictions used for planning and deficiency analysis can be shared and communicated more readily.

ii. Design or construction can use this data for notification of projects being developed by other jurisdictions or private development, to perform root cause analysis of deficiencies with all related roadways, bridges rails, ferries, and freight data available or simply to communicate project related information to stakeholders and constituents more easily. Multi-jurisdictional projects will really benefit from this data.

iii. Maintenance and operations can use this data for routing emergency response vehicles and routing traffic around a crash or spill. Other vehicles can be dispatched and routed. ITS applications can be enhanced particularly those that illustrate traffic congestion and problems over the Internet. Currently those applications are only for state highways but the traveling public doesn't care about jurisdiction, just about routes. Tracking assets along a roadway is facilitated with this kind of data.

3. Environmental Analysis and Management
   i. Analysis of watersheds for impervious surfaces would be facilitated with roads, trails and rails in a watershed,
   ii. Evaluating other infrastructure in place for water including tracking storm water systems along roadways could be accommodated.
   iii. Salmon enhancement planning involving ecosystem assessments of road and hydro relations would be facilitated.

This summary of possibilities, depending on which applications are developed by the organizations, using the WA-Trans data is in no way a complete assessment of business needs.   However, it does serve to illustrate the diversity of functions and applications that could be served by the successful completion, continual improvement and maintenance of a statewide transportation framework. It is also this diversity of functions that make the construction of the framework difficult.

Project Organization and Approach
The Washington State Geographic Information Council (WAGIC) and the State Framework Management Group support the project. Washington State Department of Transportation (WSDOT) has hired a full-time project manager. This project will be developed using partnerships for funding, resources, data acquisition and maintenance. Partners in the effort include various counties, MPOs, State and Federal Agencies and private industry. A steering committee has been formed to provide active decision-making and project oversight. The project is going to be a phased iterative effort. Business needs will be gathered and business requirements will be prioritized so the most critical uses can be facilitated first. It is anticipated that phases will include pilot projects to mitigate risk and determine the effectiveness of various approaches. The functionality and accuracy of the transportation framework will depend on the accuracy of the data and funding available for that release. The scope will be limited (Ex. paved roads only) to mitigate risk. Later releases will have increased functionality and scope (other modes added). There are options for accelerating the process available that are higher cost. The goal is to only have one "copy" so costs are minimized and accuracy is maintained and improved. A key element is a separate database to allow for transactional updating of the framework to maintain data quality. This piece will be completed after the road-network is done and will be piloted first.

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